EXHIBIT 26

UNITED STATES DISTRICT COURT
DISTRICT OF MINNESOTA

In Re: Bair Hugger Forced Air Warming Products Liability Litigation	)	
This Document Relates To:	)	
All Actions.	)	MDL No. 15-2666 (JNE/FLN)

VIDEOTAPED DEPOSITION OF SAID ELGHOBASHI
Newport Beach, California
Thursday, June 15, 2017

Reported by:
ELIZABETH BORRELLI, CSR No. 7844, CCRR, CLR
JOB NO. 124785

Page 162

Oh, okay. Sorry.
I don't recall, yeah.
BY MR. GORDON:
Q. Okay. Were -- which, if any, of these references were provided to you by counsel?
A. I don't think any except -- let's see. Let me go here. Maybe the paper by Noble, it came from counsel, maybe. Noble. There are many -- Noble is a well-known guy, but I think one of them came -- yeah, one of them came from counsel, yeah, but the rest is all -- yeah, correct.
Q. Okay. Okay. And in your CFD, you sel- -- you chose to assume 3 million skin squames.
A. Correct.
Q. And do you remember the distance from the ground for the floor?
A. One centimeter.
MS. ANDREWS: Pause, please. We have a technical glitch.
I don't see that our realtime is working. I'm wondering if one of these other ones are. It just says lunch.
Can you help us with our realtime?
THE REPORTER: If we go off.
MR. GORDON: Yeah.

Page 163

MS. ANDREWS: Thank you.
THE VIDEOGRAPHER: Off the video; 4:03.
(Off the record.)
THE VIDEOGRAPHER: Back on the video record; 6:0- -- or 4:04.
BY MR. GORDON:
Q. Talking about the parameters you used for the -- the squames in your CFD, how did you decide on 3 million as the number of skin squames?
A. So human adult, the skin of a human adult is covered with 4 billion squames. The area of the human body is 2 meters square, and if you use squames measurements, photograph shows about rectangular of a square 25 micron by 25 micron. If you --
[Reporter requests clarification.]
THE WITNESS: 25 micron by 25 micron. If you divide 4 billion -- if I divide 2 meters squared by that area of one squame, you get 4 billion. I did that, but I found other papers by Snyder showing the same number.
BY MR. GORDON:
Q. You're talking about --
A. S-N-Y-D-E-R.
[Reporter requests clarification.]

Page 164

THE WITNESS: S-N-Y-D-E-R, Snyder.
BY MR. GORDON:
Q. That's a paper about retail food operations?
A. Correct.
Q. Okay. And what was it you got from this --
A. He men- --
Q. -- Snyder paper?
A. He mentioned the number 4 billion squames and has he detailed -- the title looks funny, but it's a scientific paper.
Q. Okay. Well, the -- I'm trying -- trying to understand.
A. So I'm --
Q. Okay. Go ahead.
A. Okay. So 2 meters square by a little thing, 25-micron by 25-micron, you get 4 billion. And the paper by Noble said the human being sheds 4 billion squames in one to four days. So I took one, which is the very conserve -- I took four days, means 1 billion a day. That's a very conservative estimate.
[Reporter requests clarification.]
THE WITNESS: Estimate.

Page 165

And if you have four medical staff in a room, they will be emitting 4 billion a day each -- I mean, 1 billion a day each. If you divide that by 24 hours, you get about 40 million squames per person per hour. Multiplied by four, you get 160 million squames per hour. And I took 3 million, which is less than 2 percent. I get the very lowest thing and I put them far away from the patient on the floor.
BY MR. GORDON:
Q. Well, how did you come up with the 2 percent?
A. It's a small number to divide it over the area around the table.
Q. Did you consider the impact of protective clothing that the -- the staff wears?
A. Correct. I read about that, yes.
Q. And did that factor into your calculations?
A. Correct. I mean, it's -- you read a lot about this and I came up with 3 million as a very conservative estimate to be on the floor after one hour of working in the room.
Q. Did you -- and did you factor in the impact of the ventilation system on the squames?

A. Okay. Here we go. So first I put the squames all on the floor because in a real room, they are not on the floor. It would have been very easy to put them outside -- above the -- but then I made it so conservative -- I gave 3M the best scenario, from number 2 percent of human beings and all on the floor. I could have put them in the -- spread in the room, then we follow how they spread.

[Reporter requests clarification.]

THE WITNESS: How they spread, S-P-R-E-A-D.

BY MR. GORDON:

Q. Did you read any studies or any literature that suggested that 3 million squames in the area you defined, one centimeter above the floor, is representative of what actually happens in an actual operating room during a surgery?

A. I didn't read a paper that have 3 million. I made an estimate of conserv- -- I could have put 10 million or 20 million, which is still a small percentage of the people. I just took the lowest one.

Q. But you -- your number, whatever it is, assumed, based on your calculations, that the squames that people were -- were shedding were

settling to the floor and staying there?

A. Again, I put them on the floor first and let the fluid mechanics of the room disperse them. I could -- if I had put them spread already, then I will be biasing the result that could be go to the knee directly, if they are above the lamp or something. So I made it so that their position would not be a cause of the result. So I made it so that it would not be causing artificial results. I put them far away from everybody on the floor.

Q. Do you have, other than your own calculations, any support for the idea that 3 million squames on the floor in the area you've prescribed is realistic --

MS. ANDREWS: Objection.

BY MR. GORDON:

Q. -- based on actual surgeries?

MS. ANDREWS: Objection. Argumentative. Form.

[Reporter requests clarification.]

MS. ANDREWS: Form.

THE WITNESS: When papers say a human being sheds 4 billion squames in one day to four days, I took one day. I did not take one day. I took 2 percent of that one day. To me, that is very

real realistic, to me.

[Reporter requests clarification.]

THE WITNESS: Realistic.

BY MR. GORDON:

Q. Okay. Did you factor in how -- how many squames the Bair Hugger unit would be removing through its own filtration system?

A. Very good question. If I had done this and allowed the filter in the Bair Hugger to allow squames, whatever number, whatever percentage, it will be injected over the body of the patient, and I did not do that. So I prevented all the squames from being sucked by the blower. I could have done that, but I didn't.

Q. And the squame size you used was 10 microns, right?

A. Correct.

Q. Do you have any idea what the Bair Hugger's filtration efficiency is for 10 -- particle the size of 10 microns?

A. I think it was -- I read about the filtration.

MS. ANDREWS: I just don't want you to speculate --

THE WITNESS: Okay.

MS. ANDREWS: -- or guess.

THE WITNESS: Okay.

BY MR. GORDON:

Q. Yeah, we -- we started off this morning by saying that, remember?

A. Okay.

Q. Don't speculate, don't guess.

A. Okay. Okay. Okay.

Q. Your counsel shouldn't have to --

A. Okay.

Q. -- you know, tell you that anymore.

A. Uh-huh.

MS. ANDREWS: But she will if she needs to.

BY MR. GORDON:

Q. Yeah. But -- but what she's doing is telling you don't answer this question, not --

MS. ANDREWS: You know, Counsel, that colloquy --

MR. GORDON: Well, Counsel, that was the most obvious prompt.

MS. ANDREWS: -- is just absolutely improper.

Do you have an -- do you have an answer to the counsel's --

[Reporter requests clarification.]
THE WITNESS: Mass flow rate divided by the area of the edges of the drape.
BY MR. GORDON:
Q. Right. And but it's -- is that -- does the term "slot jet" have any meaning to you?
A. Yes, of course, yes.
Q. Is what you're describing a slot jet?
A. Okay, but it's -- it's a long -- if you wish, it's a long slot jet. It's along the edges. I mean, the slot jet usually, you know, something like this (indicating). This is distributed uniformly of a length, yes.
Q. Okay. Have you ever known anyone who has had surgery with a Bair Hugger?
A. No.
Q. Did you do any research to see what other pieces of equipment might be used in an operating room that generate heat?
A. I know there could be other machines, but I didn't do research on it.
Q. The same question with respect to machines that could generate air currents, did you do any research there?
MS. ANDREWS: Incomplete hypothetical.

Form.
THE WITNESS: Question again, please.
BY MR. ASSAAD:
Q. Did you do any research to see if there were other pieces of equipment used in operating rooms that generate air currents?
MS. ANDREWS: Air currents?
MR. GORDON: Yes.
MS. ANDREWS: Same objection.
MR. ASSAAD: You can answer.
MS. ANDREWS: I'm sorry, you can answer.
THE WITNESS: Oh, I can answer? I thought you --
MS. ANDREWS: Forgive me.
THE WITNESS: Okay. The question is -- repeat it. Did I do any research on other devices in an operating room that blow air? Is that correct? No, I did not.
BY MR. ASSAAD:
Q. Or generate air currents, I guess is what I said.
A. No.
Q. Okay. So your model doesn't consider any other sources of air movement other than the HVAC system and the Bair Hugger; is that correct?

MS. ANDREWS: Objection.
THE WITNESS: The lamp, the surgical lamp, has higher temperature than the ambient air that creates plume air movement, but because it does not have a blower in it, it's just by buoyancy.
BY MR. ASSAAD:
Q. And thank you. My question is limited to mechanical movement of air, not thermal convection.
[Reporter requests clarification.]
MR. GORDON: Convection.
THE WITNESS: I did not include the computer that has a fan or other device that has fans.
[Reporter requests clarification.]
THE WITNESS: That has a fan. That have a fan, yeah. Yes.
BY MR. GORDON:
Q. Okay. And in terms of heat sources, the only ones that you included in your model were the -- was it two surgeons and --
A. Four...
Q. Four surgeons, two lamps?
A. Two lamps, yes.
Q. And a patient?
A. And the blower.

Q. And the blower.
A. Correct.
Q. Those are the only heat sources?
A. Correct.
MR. GORDON: Thank you.
MS. ZIMMERMAN: Are you done?
MR. GORDON: Uh-huh.
MS. ANDREWS: Sorry, are you finished?
MR. GORDON: Yep.
MS. ANDREWS: Okay. We need a few minutes.
MS. ZIMMERMAN: We'll be back in just a few.
MS. ANDREWS: Let me hand you this note.
THE VIDEOGRAPHER: Off the video at 5:04.
(Discussion off the record.)
THE VIDEOGRAPHER: Back on the video record 5:16.
EXAMINATION
BY MR. ASSAAD:
Q. Dr. Elghobashi, my name is Gabriel Assaad, and I represent the plaintiffs in this case. And you and I have met before, correct?
A. Yes.
Q. Okay. And we asked -- and we retained you

to do a computation of fluid dynamics study of the Bair Hugger in operating room?
A. Yes.
Q. Okay. You were asked questions regarding whether or not you considered other devices in the operating room when you performed your analysis. Do you remember those questions from defense counsel?
A. I do.
Q. Okay. And you said you didn't consider them, correct?
A. Correct.
Q. Why didn't you consider them?
A. I focused, excuse me, on the devices that will have the main impact on the flow on the operating, on the -- yes.
Q. Okay. When you said you want the focus on the device, you're talking about focusing on the Bair Hugger, correct?
A. Yes, the Bair Hugger and the -- the whole setup. I took the main ingredients that matters for this flow, like devices that are far away and would have little impact on the results.
Q. If any, correct?
A. Correct.
Q. Okay. And by -- and correct me if I'm

wrong, but I understand when people do research, they try to -- they don't want to have too many variables so they could determine how one variable acts on the environment. Does that sound correct?
MR. GORDON: Object to the form of the question.
THE WITNESS: It's too general, but if you want to do research, you have to focus in the main ingredients that matter, yes.
BY MR. ASSAAD:
Q. Okay. And I'm going to jump around a little bit because we are going to try to get out of here.
Earlier today you were talking about the measurements you took at Santa Monica. Do you remember those discussions?
A. Correct.
Q. And your response was: To do, like, temperature and velocity measurements you needed instruments and preparation?
A. Correct.
Q. Okay. What did you mean by that?
A. I meant it will cost you more than a million dollars.
Q. Why?

A. Because PIV need four cameras for 3D and two laser sheets and a lot of equipment for storage and trained personnel; all of them must have many PhDs, yeah.
Q. And have you done that in the past?
A. I have not.
Q. But have you done -- have you read research and people doing that in the past?
A. Yeah, I know who -- who are the best in the country.
Q. Okay. And you're familiar with the cost of how much that will cost?
A. Definitely.
Q. Okay. And when you do take measurements, does it make a difference if a person is tak- -- doing it by hand as compared to it being done by computers and PIV?
A. These days, yes.
Q. Why?
A. For accuracy you need 3D measurements --
[Reporter requests clarification.]
BY MR. ASSAAD:
Q. Just repeat your answer. For accuracy?
A. For accuracy, accuracy, yes; for accurate measurements you need qualified people to do the

measurements, and I'm not talking about flow visualization, like sheering and all this. I want people to measure three dimensional velocity components, U, V and W, the function of time and space, and then you can do proper comparison.
Q. People in your field, do they use a hot wire anemometer to take temperature and velocity measurements to validate a CFD study?
A. Not these days.
Q. Why not?
A. Because they're not accurate.
Q. Okay. And the fact that someone is in the room taking that measurements, does that change the results of those measurements?
A. Invasive, you don't not need invasive --
[Reporter requests clarification.]
MR. ASSAAD: Invasive.
THE WITNESS: Invasive.
[Reporter requests clarification.]
THE WITNESS: You -- it should be noninvasive technologies, yes.
BY MR. ASSAAD:
Q. Okay. And when you give a noninvasive, where no one else is in the room, correct?
A. Right.

A. Yes.
Q. Okay.
A. He's at Stanford, yeah.
Q. And you had -- you met with him, correct?
A. We always meet, yeah.
Q. Okay. And if he had a problem with your methodology, he would tell you, correct?
MR. GORDON: Object to the form of the question.
BY MR. ASSAAD:
Q. Well, did he ever tell you he had a problem with your methodology?
A. What?
Q. Did he ever say to you in your meetings when you -- when you -- when you hired his grad students --
A. Right.
Q. -- that your methodology is not accepted among -- among the -- the fluid mechanics experts?
A. No. No.
Q. Okay. And you've worked together before with Dr. Apte?
A. Not really. I met him many times in conferences and presentations, but I have not worked with him personally.

Q. And what conferences would you -- were you referring to?
A. American Physical Society of Fluid Dynamics.
Q. Okay. Have you ever seen Dr. Abraham at any of these societies?
A. No, but the -- the conference is quite big. I do not know what -- yeah.
Q. All right. Do you keep up to date with all the -- the journals and articles dealing with particle flow in turbulent environments?
MR. GORDON: Object to the form of the question.
THE WITNESS: Well, I review many of them, so I -- I read -- I review for the leading journals.
BY MR. ASSAAD:
Q. Okay. Have you ever come across an article on -- on particle movement ever written by Dr. Abraham in turbulent flow?
A. No.
Q. Okay. Before today, before this case, have you ever heard of Dr. Abraham?
A. No.
Q. Okay. Based on your review of the 3M videos and a little bit of the pictures in this

report, do you know whether or not Dr. Abraham used -- or -- or solved for the particle movement through the operating room environment, or did he do something else?
MR. GORDON: Object to the form of the question.
THE WITNESS: I -- all I see in the report of Dr. Abraham is the fluid particle -- fluid particle -- like motion or, like, tracing of fluid points.
BY MR. ASSAAD:
Q. Okay. What's the difference between tracing of fluid points that Dr. Abraham did and what you did?
A. Okay. If you sprinkle some power in a turbulent flow, these particles do not follow the flow.
Q. Wait. Let -- let me understand. Are you saying particles don't follow air flow?
A. Do not follow the local air flow.
Q. Okay. What do you mean by that?
A. Because particles -- particle motion is controlled by drag, lift, added mass, many other terms, plus buoyant -- plus gravity term. If you neglect all these terms, you would be assuming that

the particle follow the fluid. They don't.
Q. Okay. In real life scenarios on stuff that you've worked on in the past --
A. Yes.
Q. -- does particle follow air flow?
A. Only if the particle is 1 micron.
Q. Okay.
A. Not 25 or not 20 or 10.
Q. Okay.
A. For that density.
Q. Okay. Go ahead.
A. The density of the squames is like water.
Q. Okay. Are you familiar with the Boussinesq approach that was used by Dr. Abraham?
A. Yes.
Q. Okay. Is -- as a -- as a person who's an expert in the field of -- of particle movement in turbulent flow -- let's back up further one second. Okay.
Does a laminar diffuser -- is the flow in an operating room laminar or turbulent?
A. Turbulent.
Q. Why is it turbulence?
A. Reynolds' number is about 10,000.
[Reporter requests clarification.]

THE WITNESS: Reynolds. Yes.
BY MR. ASSAAD:
Q. So as a expert in fluid flow, would you consider any operating room have true laminar flow?
A. Never.
Q. Okay. You have done -- in your CFD analysis, does the -- when the Bair Hugger's turned on, does it increase the intensity of the turbulence around the operating room table?
A. Correct. The intensity increases because the rising plume interacts with the ambient air, creates a sheer layer, and therefore, the intensity turbokinetic energy increases.
Q. Okay. This -- the calculation that you've done is -- is basically -- turbulence is very important to the -- to the -- solving this problem?
A. Definitely.
Q. Why is turbulence important?
A. Because turbulence increases dispersion of particles and dis- -- and diffusion of any scaler, like heat or any species. Turbulent is a good mixer.
Q. So turbulent means mixing?
A. Absolutely.
Q. Okay. Now, Dr. Abraham used something

called the Boussinesq approach.
A. Yes.
Q. Are you familiar with the Boussinesq approach?
A. Yes.
Q. Okay. How does the Boussinesq -- does the Bouss- -- would a -- the Boussinesq approach be the correct approach in a problem such as this?
A. No.
Q. Why not?
A. Boussinesq approach considered the density of the air or the fluid to be uniform, constant everywhere except for the buoyancy term, which appears in the Navier-Stokes equation. And, therefore, the nonlinear terms in Navier-Stokes equation will not have the influence of density variation.
[Reporter requests clarification.]
THE WITNESS: Density variation.
BY MR. ASSAAD:
Q. In -- in a situation like this, how important is density variation?
A. It's crucial, because you have a heating source, whether it's a lamp or the air -- Bair Hugger, or the heads of people, any temperature

variation --
[Reporter requests clarification.]
THE WITNESS: Temperature variation, the temperature everywhere is not uniform. It varies in time and space. And, therefore, we have to account for the local variation of density in order to have a correct solution -- or reliable solution.
BY MS. ANDREWS:
Q. Because the partic- -- the density of the air will have an effect on the particle?
A. Definitely. Dispersion.
Q. And by using the Boussinesq approach, you -- you take away that force on the particle by removing density?
MR. GORDON: Object to the form of the question.
THE WITNESS: Well, you change -- you are not solving the correct equation. That's what it is.
BY MR. ASSAAD:
Q. Okay. How does using the Boussinesq approach, how would that affect the calculations that -- that are needed to calculate the particle movements in an operating room?
A. It's a -- a general question, and I -- I

just say, basically, you must use correct equations for a given flow, and Boussinesq is not the right one for this flow.
Q. What would Boussinesq be the appropriate flow equation for?
A. For -- if you have a -- a room like this with no air conditioning and you have a heat source like a lamp or a candle, that would be a good -- it's a --
[Reporter requests clarification.]
THE WITNESS: Good approximation.
Basically, Boussinesq approximation is correct for natural convection. Natural convection means no electric motor, blower or anything.
BY MR. ASSAAD:
Q. So with an operating room that has a lot of flow coming in from the ceiling --
A. Right, right.
Q. -- the -- the Boussinesq approach would not be an accurate --
A. Be- -- not because of the air coming from the ceiling. Because there are temperature variation in the room for --
[Reporter requests clarification.]
MR. ASSAAD: Temperature variations.